SWP Purpose, Introduction

Chainsaws are used frequently in both trail building and maintenance, to clear trees & branches from new or existing trails. These are dangerous tools even when properly used, as a minor error in judgment or a missing step in the process can lead to serious injury or fatality. This safe work practice (SWP) is intended to help workers in using chainsaws, if necessary.

Training

Only volunteers with valid certifications are permitted to use chainsaws when working for the GDTA. These certifications must be presented to the GDTA for its records. A training program emphasizing hazard awareness and mitigation has been adopted by the GDTA for its workers/volunteers. **New GDTA volunteers should be paired with experienced GDTA chain saw volunteers (shadowing) to assess skills level and adherence to safety procedures.**

The use of chainsaws by volunteers will be limited to tasks to which their level of training has prepared them for. All chainsaw operators are required to have a qualification in chainsaw safety that is recognized by the industry. Accredited providers of chainsaw safety courses include Arboriculture Canada, Woodland Trainers Association and the BC Forest Safety Council.

A synopsis of the course offered by the GDTA for its volunteers, Arboriculture Canada's 'Chainsaw Safety and Cutting Techniques' is as follows:
Chainsaws are one of the most useful as well as potentially dangerous tools a worker can use. This course is designed to educate personnel who use a chainsaw about safety, maintenance, use and handling. Participants will gain an understanding in what contributes to accidents and how to avoid them. Hands on and practical work planning strategies, including bucking and limbing, understanding compression and tension and dealing with spring poles will be coached and practiced in this course. Notching and back cutting will be introduced for small tree felling on trees of 6" DBH or smaller. There is a strong focus on personal safety, risk assessment and accident prevention. Training workers and developing skills that reduce variables and mitigate risks associated with chainsaws and cutting techniques is the general theme of this course.

A chainsaw operator must have completed the Arboriculture Canada course "Hazard and Danger Tree Cutting and Falling" to perform any of the following tasks:

a) fell trees that exhibit defects, cavities or decay
b) fell trees that are hung or snagged
c) freeing spring poles
d) felling where mechanical advantage is required

Work site safety and hazard assessment

No work will take place until a Safety Tailgate Meeting has taken place and all site-specific hazards have been identified, discussed, and mitigated. An Emergency Response Plan and signaling system is an essential part of the work plan.

• The Trail Crew Leader will constantly evaluate chainsaw operations and potential hazards. Mentoring of newly trained volunteers will be an essential component of GDTA operations.

• All non-chainsaw workers assigned to assisting in clearing activities must go through an orientation on working safely around felling and bucking operations.

• Trail closures will be mandatory for the period of time that tree felling and clearing is occurring to eliminate the risk to the public. Warning signage and spotters will be used to maintain a closed work site. **NOTE: signage and spotters shall be posted at both ends of an "active trail" to maintain the closed work site and protect hikers.**

Felling Specific Requirements

A six-step felling plan must be in place addressing the following:

1. Risk Assessment (Inner and outer perimeter survey and red flag indicators)
2. Height, lean, slope assessment
3. Confirmation that the following are present: PPE, Axe, Wedges, Blood stopper, Whistle, First Aid kit
4. Escape Route **– including signage to block off trail within 100 feet both directions**
5. Notch plan
6. Back cut plan

• Open Face notch is usually the notch of choice. 70 degree angle is cut from the top of the notch with the width of the notch apex being 80% of the diameter of the tree. Hinge thickness should end up being 5-10% of the diameter of the trunk after the back cut is placed.

• The back cut should be level or slightly above the notch apex.

• No one other than the feller should be within 1.5 x the height of the tree measured from the stump if on level ground.

Scope

This SWP applies to any worker who may be required to fell a tree or remove branches using a chainsaw or who is part of a team assisting in felling. These workers will be required to review this SWP prior to tree felling/branch removal activities.

Responsibilities

Responsibilities apply to the **Trip Manager**/Volunteer Lead, all workers, and the Health and Safety Committee.

It is the responsibility of the **Trip Manager**/Volunteer Lead to

- Communicate to workers the hazards involved in these tasks.
- Reinforce to workers that only fully qualified, certified and approved individuals may operate a chainsaw.
- **Assess, or delegate the assessment to experienced GDTA Chain saw volunteers, for new chainsaw volunteers' chainsaw skills and adherence to safety procedures.**
- Require that this SWP be implemented for all job sites.

It is the responsibility of the Workers to

- Be aware of the potential hazards that may be encountered during felling and limbing work.
- Ensure the correct equipment is appropriately used.
- Ensure the correct equipment is properly maintained.
- Be familiar with, understand, and consistently apply knowledge of manufacturer's instructions.
- Inspect equipment and work site regularly for hazards.
- Know how to control and respond to hazards and emergencies including use of emergency equipment.
- Promptly communicate possible hazards to other workers at work site; everyone at the work site is responsible for crew safety.
- Immediately report any safety occurrence to the Crew Lead.

It is the responsibility of the Safety Committee to

- Maintain this Safe Work Practice
- Perform periodic audits to assess that these requirements/SWP are being acted upon.
- Reinforce that recommended controls are to be implemented and used appropriately.
- Ensure that chainsaws are properly and regularly maintained, as per manufacturer's instructions.
- Ensure that the manufacturer's instructions are available. (Typically located in camp).

Hazards

Hazards may be due to environmental conditions such as weather (precipitation, temperature, wind).

Hazards may also be due to poorly maintained chainsaws or selection of an inappropriate chainsaw.

Hazards due to worker behavior include psychological factors such as stress, lack of familiarity with the equipment and/or task at hand. Hazards may be due to lack of appropriate, well-maintained PPE.

Hazards may include kickback (strains, sprains) as well as cuts, lacerations, or amputations.

Hazards may include the falling trees or parts of these trees.

Hazards may include projectiles or dirt thrown by the chain.

Controls

Controls may include elimination/substitution, engineering, warnings, administrative, and/or PPE.

Chainsaw work must be done within the restrictions of an individual's certification level. Under no circumstances will an operator use a chainsaw in a manner not covered by the operator's certification.

Complete PPE – including helmet, earmuffs, face shield, gloves, safety pants and boots must be worn always during chain saw operation. All PPE must be CSA certified and in full working order. Volunteers witnessing unsafe chainsaw practice are obliged to report their concerns to Volunteer Leaders and potentially refuse work as outlined in Section 1.3.

- The most important control is training. Only qualified individuals will be permitted to use chainsaws.
- Take frequent breaks when operating a chainsaw
- All chainsaw operators must wear the following CSA approved PPE:
    - Hard Hat/Helmet meeting ANSI Z89.1 standards
    - Safety Glasses and Face Shield
    - Hearing Protection of at least 24 dBA of attenuation
    - Chaps/Chainsaw-resistant Pants. **Chain saw pants are recommended for felling trees**
    - Gloves
    - CSA-approved Steel/composite-toed full leather work boots that extend past the ankle or higher
- The use of anti-vibration gloves during chainsaw operation is recommended.
- Inspect PPE prior to use.
- Inspect the chainsaw prior to use; check for loose or missing components.
- The chainsaw must be inspected frequently and removed from service immediately if any defects are evident.
- All power chainsaws must be equipped with
    - a chain that minimizes the risk of kick back
    - a front handle guard
    - a throttle control lockout
    - anti-vibration mounts
    - a rear hand guard
    - a chain catcher
    - a spark arrestor
    - a sprocket-nose guide bar
    - an on/off switch
- The engine shall not be started until the saw is in the immediate work area, except when a warm-up period is required at which time the saw shall not be left unattended.
- Test the chain brake by activating prior to felling/limbing.
- The work area must be cleared of obstructions to eliminate hazards.

- Before beginning the cut, the operator must plan an escape route.
- Only the operator will be permitted to be within a radius of 3 m of a one-person chainsaw, when operating.
- Consider if signage or flagging is required to ensure that non-workers and/or non-operators do not enter the work area.
- The chain must not be adjusted while the saw is running.
- The operator must always be aware of the consequences of any cut before it is made.
- Chainsaws shall not be operated for cuts above shoulder level.
- Shut off the engine before moving the saw from one location to another, except when trees are in close proximity and the approach is unobstructed. Ensure that this is the case before moving towards the next tree.
- When moving from tree to tree in proximity, apply the chain brake.
- Cool a hot chainsaw for 2 – 3 minutes prior to refueling. Always place a hot saw on a log, stump or on bare ground or other non-flammable surface; not in dry litter or slash.
- Smoking, open flame, or other sources of ignition (e.g. sparks) are prohibited within 3 m of the refueling area.
- Ensure that appropriate first aid kit is available and that at least one worker on site is certified
- Ensure that communication is available in case of incident – i.e. SPOT device, satellite phone, radio, cell phone (only if reception reliable).
- Guard the chain when the chainsaw is being stored or carried long distances.
- A one-person power saw must be carried at the worker's side with the guide bar pointed to the rear; two workers must carry a 2-person power saw.
- When not in use, turn off the saw and place it in a location where it is clear of the work area, is not a tripping hazard, and will not be damaged by falling trees/limbs.
- Eye protection is required when refueling

Tree Felling Best Practices

- Do not fell trees onto lodged trees
- Do not climb lodged trees
- Do not work directly underneath or within striking distance of a lodged tree
- Do not turn your back to a falling tree
- Watch for dead limbs and other objects falling from felled trees.
- Monitor a felled tree as it strikes the ground, as the butt portion may move towards the operator.
- Ensure that the tree has completely settled and adjacent trees are secure before moving in to remove rigging, start bucking, etc.
- Notches should be used for all trees > 13 cm in diameter at breast height (DBH)
- Inspect tree prior to felling for

  - Rot
  - Lean
  - Insect damage
  - Foreign bodies such as staples, wires, etc.
  - Structural deficiencies, decay, cavities, cracks, splits, etc.
  - Broken tops
  - Dead limbs
- Inspect the hazard area prior to felling. The Hazard Area is the intended falling path of the tree. Inspect for
  - Terrain including ground conditions, slope
  - Dead trees
  - Overhead utilities
  - Pedestrian and vehicular traffic
  - Workers
  - Equipment (e.g. quads)
  - Climatic conditions/wind/snow loading, etc.
  - Tripping hazards
- Set rigging equipment if required.
- Know which notch to use to obtain the safest falling; consider
  - Lean of tree
  - Wind
  - Potential targets
  - Condition of tree
  - Size of tree
  - Length of chainsaw bar
- Set notch in accordance with notch used, ensure that notch direction is in the correct location, and inspect the notch for tree condition (e.g. rot, decay, cavity).
- Determine location of back cut and communicate to other workers your intention to perform the back cut
- Perform the back cut; if tree falls in a direction other than what was intended, saw operator must leave the area by the pre-determined escape route.
- Know how to deal with spring poles, if trained to do so
- Bowed trees and uprooted trees are under tension and can be dangerous to the operator
- Leaners may fall prematurely
- Burned trees are unstable and are often hollow, very hard/brittle, and abrasive to cut
- Oversize trees require the use of proper techniques so as not to pinch the saw; if the saw becomes bound in a cut, the priority is the safety of the operator. Leave all equipment behind and focus on your safety.
- Snags cannot be felled safely

Resources, References, Definitions

Arborist Safe Work Practices, Third Edition, 2011:
http://www.wsps.ca/WSPS/media/Site/Resources/Downloads/arborist_manual_3rd_edition_final2.pdf

Revision History

Revision	Date	Description of Change	Personnel Involved
REV 0	Feb 2020	New SWP	D Yanchula
REV 1	Apr 2021	New volunteer assessment, HACR high risk	D Yanchula
		Signage both ends of trail	